IN THE CLAIMS:

1. (Previously presented) A method of producing a carbon nanostructure wherein a carbon crystal is grown by vapor phase epitaxy from a crystal growth surface of a catalyst base including a catalyst material, the method comprising:

forming said catalyst base as a columnar body having said crystal growth surface at a first end surface of the columnar body and a non-crystal growth surface at a second end surface of the columnar body opposite the first end surface, including

performing diameter-reduction processing by at least one of drawing, extrusion, rolling, and forging;

forming said catalyst material to extend from said crystal growth surface to said non-crystal grown surface; and

disposing a non-catalyst material on said crystal growth surface and on at least a portion of a side surface of said catalyst material;

wherein said non-catalyst material does not have a substantial catalytic function for growth of said carbon crystal.

2. (Cancelled).

3. (Currently Amended) The method of producing a carbon nanostructure according to claim 1, wherein

forming said catalyst base comprises forming an aggregate including an arrangement of a plurality of catalyst structures,

said catalyst structures include ~~a second~~ the non-catalyst material on said crystal growth surface and on at least a portion of a side surface of said catalyst material,

said ~~second~~ non-catalyst material is formed on at least a portion of a side surface of said aggregate, and said catalyst structures have variations of at most CV 10% in surface areas of said catalyst material on said crystal growth surface.

4. (Previously Presented) The method of producing a carbon nanostructure according to claim 1, wherein

said catalyst material is formed with at least one of a member selected from the group consisting of Fe, Co, Mo, and Ni, and said non-catalyst material is formed with Ag and/or an Ag-containing alloy.

5. (Previously Presented) The method of producing a carbon nanostructure according to claim 1, wherein

surface processing is performed by at least one of oxidation, nitriding and carbonization to define an interface between said catalyst material and said non-catalyst material on said crystal growth surface.

6. (Previously Presented) The method of producing a carbon nanostructure according to claim 1, wherein

said catalyst base having a multilayer structure is formed by alternately stacking said catalyst material and said non-catalyst material by a vapor phase method.

7. (Cancelled).

8. (Previously Presented) The method of producing a carbon nanostructure according to claim 1, wherein

said diameter-reduction processing is performed such that, an outside diameter of a solid or hollow catalyst material after the diameter-reduction processing becomes at least 1×10^{-6} % and at most 1 % of that before the diameter-reduction processing.

9. (Previously Presented) The method of producing a carbon nanostructure according to claim 1, wherein

said catalyst material has a multilayer structure on the crystal growth surface.

10. (Previously Presented) The method of producing a carbon nanostructure according to claim 1, wherein

said catalyst base is formed such that, said catalyst material has at least any of a round shape, a ring-like shape, a polygonal shape, a spiral shape, a waved shape, and a branching shape on the crystal growth surface.

11. (Original) The method of producing a carbon nanostructure according to claim 1, wherein

mechanical polishing and/or sputtering is performed as surface processing for said crystal growth surface.

12. (Previously Presented) The method of producing a carbon nanostructure according to claim 11, wherein

an ion is entered into said catalyst material before and/or after said surface processing.

13 (Previously Presented) The method of producing a carbon nanostructure according to claim 1, comprising the steps of:

supplying carbon from a non-crystal growth surface of said catalyst base to set at least a portion of carbon in said catalyst material to a saturated state; and

growing a carbon crystal from said crystal growth surface.

14. (Previously Presented) The method of producing a carbon nanostructure according to claim 1, wherein

a reducing gas is brought into contact with at least the crystal growth surface of said catalyst material before or during growth of the carbon crystal.

15. (Previously Presented) The method of producing a carbon nanostructure according to claim 1, wherein

a material gas and/or carbon is ionized and brought into contact with said catalyst base.